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ABSTRACT

Chapter 7 of "The Economics of Gender in Mexico" discusses how Mexico's "ejido" system, a semicollective form of land tenure, has been undergoing a process of privatization in which parcels are being converted into privately held land. Simultaneously, small-scale producers have been hurt by the lifting of price and credit subsidies and the passage of NAFTA (North American Free Trade Agreement). These changes have prompted "ejidatarios" to look for off-farm employment. An analysis of the determinants of off-farm employment for "ejido" residents and the degree to which these determinants differ by gender and generation yields several findings. First, the availability of non-agricultural jobs is unevenly distributed among Mexico's rural regions. This has implications for the gender composition of employment because women are more likely to obtain skilled or semiskilled jobs than men. Second, the labor force participation of young rural women is catching up with and even exceeding that of their male counterparts. Finally, the fact that male household heads are the only group whose off-farm employment is altered by the income support program (PROCAMPO) that replaced grain production subsidies suggests some degree of private appropriation of farm-based income among ejidatarios, which in turn influences the labor supply decisions of daughters. Policy recommendations include investing in gender-neutral, off-farm employment opportunities; raising the skill level of "ejido" residents, especially girls, through education; and increasing access of all household members to PROCAMPO payments. (Contains 17 references and 24 endnotes.) (TD)

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Gender, Generation, and Off-Farm Employment on the Mexican *Ejido*

Elizabeth Katz

Since the 1930s, most rural Mexicans have had access to their most important productive resource—land—mediated by membership in the *ejido*, a semicollective form of tenure which makes up over half of Mexico's farmland and incorporates 75 percent of agricultural producers (World Bank 1998). Traditionally, *ejidatarios* have combined the cultivation of basic grain crops with small-scale commercial agriculture and seasonal migration to generate their income. Beginning in 1992, with the reform of Article 27 of the Mexican Constitution and the launching of the national *Ejido* Titling Program (PROCEDE), the *ejido* sector has been undergoing a process of privatization, in which parcels that were previously held in individual usufruct, and some common property resources, are being converted into privately held land. Simultaneously, the agricultural sector as a whole has been significantly affected by the lifting of price and credit subsidies, and by the passage of NAFTA, which has threatened small-scale basic grains producers by allowing for the importation of cheap grains from the United States and Canada. Taken together, these changes have prompted *ejidatarios* to make necessary adjustments in their livelihood strategies, including the expansion of off-farm employment.[1]

As discussed in several other chapters in this volume, the past several decades have also witnessed an important increase in female education and labor force participation. While the rural areas lag significantly in both of these trends, young women in the *ejido* sector have much higher levels of educational attainment and are much more likely to hold wage or salaried employment than the older generation of rural women (Katz 1998).[2] This chapter examines the intersection of the transformation of the *ejido* sector and shifts in the gender composition of the Mexican workforce. It analyzes the determinants of off-farm employment for *ejido* residents and assesses the degree to which these determinants differ by gender and generation. The findings support the broad hypothesis that intrahousehold labor allocation—in particular, the deployment of household

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members to off-farm employment—is differentially responsive to individual and household characteristics, depending on members' gender and generation. Perhaps most important, the analysis reveals the ways in which gender-specific sources of farm-based income—which are themselves part of the adjustment patterns of households—have distinct impacts on the off-farm labor supply behavior of different household members.

The chapter offers a descriptive picture of off-farm employment in the *ejido* sector, drawing on both secondary literature and primary data analysis; estimates the determinants of off-farm employment for two generations of men and women in a national sample of Mexican *ejidos* and interprets the results; and concludes with a discussion of the policy implications of the analysis.

Off-Farm Employment in the *Ejido* Sector

The increasing importance of nonfarm (and in some cases nonagricultural) employment and earnings to *ejido* households has been documented by many observers of the Mexican rural economy.[3] Davis (1998) calculates that almost 25 percent of total *ejidatario* household income is generated by wage employment, and another 12 percent by off-farm self-employment.[4] Lanjouw (1998) estimates both individual- and household-level determinants of off-farm earnings among the *ejido* population. He finds that educational level, household size, dependence on corn cultivation, and paved-road access to an urban center are all positively associated with off-farm incomes, while women and people residing in households with more dependents and U.S. migrants, and on farms with more irrigation, earn significantly less. Lanjouw also finds that households with more members employed in the off-farm sector are significantly less likely to have total incomes below the poverty line (1998).

To more closely examine off-farm employment patterns by gender and household role, we must confine our attention to wage and salaried work, since the data set used here (the *Encuesta a Ejidatarios y Comuneros 1997*, carried out by the *Instituto Nacional de Desarrollo Agrario*, the World Bank, and the University of California at Berkeley) disaggregates only this type of income by individual.[5] Farm income and income from self-employment and unearned sources is registered at the household level.[6] Limiting ourselves to wage and salaried employment, then, Table 7.1 shows the breakdown of labor force participation rates by geographic region, employment sector, gender, and household role.[7] All data are weighted to correct for sample stratification. Several patterns are indicated.

Table 7.1. Off-Farm Employment by Region, Sector, Gender, and Household Role

		Men			*Women*		
	All	*All men*[1]	*Male household heads*	*Sons*	*All women*[2]	*Wives*	*Daughters*
Weighted N	6,367	3,270	1,537	1,478	3,096	1,396	1,160
Region/sector							
All Mexico							
All sectors[3]	18.9	28.3	26.8	29.6	9.1	2.7	18.2
Agriculture	33.3	40.5	40.7	38.7	9.5	13.2	9.0
Industry[4]	23.1	27.1	27.0	27.6	9.9	8.1	9.4
Commerce	6.7	3.8	0.7	5.9	16.5	8.1	18.4
Other[5]	36.9	28.7	31.3	27.7	64.0	71.1	63.5
North[6]							
All sectors	28.5	42.4	35.2	48.9	13.6	6.7	25.3
Agriculture	27.7	34.1	36.0	32.3	7.3	16.7	5.1
Industry	19.0	19.0	14.7	24.5	14.8	15.4	2.8
Commerce	3.3	2.2	2.7	1.1	7.4	8.3	7.7
Other	50.6	44.9	45.3	43.0	70.4	66.7	72.5
Pacific North[7]							
All sectors	13.0	18.0	12.7	23.1	7.3	1.7	15.6
Agriculture	34.7	41.5	44.4	34.6	15.8	50.0	13.3
Industry	15.3	18.9	16.7	23.1	5.0	0.0	6.3
Commerce	9.7	5.7	0.0	3.7	21.1	0.0	13.3
Other	40.8	34.0	38.9	38.5	60.0	50.0	66.7
Center[8]							
All sectors	21.5	32.2	30.4	33.3	10.6	1.7	21.6
Agriculture	28.3	34.0	30.7	34.2	10.6	10.0	11.4
Industry	30.4	36.1	37.4	35.6	12.8	11.1	11.5
Commerce	7.5	3.9	0.6	6.8	18.3	11.1	19.5
Other	33.9	25.8	31.3	23.3	58.5	66.7	57.5
Gulf[9]							
All sectors	16.3	24.9	27.8	22.6	6.9	2.9	14.1
Agriculture	50.5	62.6	66.7	54.8	2.5	0.0	3.4
Industry	11.2	14.1	16.0	12.9	0.0	0.0	0.0
Commerce	9.7	7.1	0.0	16.1	20.0	0.0	27.6
Other	28.7	16.7	17.3	17.5	75.0	100.0	66.7

(Table continues on the following page.)

Table 7.1. (continued)

		Men			*Women*		
	All	*All men*[1]	*Male household heads*	*Sons*	*All women*[2]	*Wives*	*Daughters*
South[10]							
All sectors	11.6	17.6	19.6	15.9	4.9	2.2	7.7
Agriculture	38.8	45.7	41.0	57.9	13.8	20.0	6.7
Industry	22.6	26.9	29.5	15.4	3.6	0.0	0.0
Commerce	3.8	0.0	0.0	0.0	17.2	16.7	21.4
Other	35.3	26.9	28.5	25.6	65.5	66.7	73.3

1. Includes men who are neither household heads nor sons.
2. Includes women who are neither wives nor daughters.
3. The figures in the "All Sectors" rows refer to labor force participation rates, while the sector-specific numbers are for employed individuals only.
4. Includes construction.
5. Includes services.
6. Includes the states of Chihuahua, Coahuila, Durango, Nuevo León, Tamaulipas, and Comarca Lagunera.
7. Includes the states of Baja California Norte, Baja California Sur, Colima, Nayarit, Sinaloa, and Sonora.
8. Includes the states of Aguascalientes, Guanajuato, Hidalgo, Jalisco, México, Michoacán, Morelos, Puebla, Querétaro, San Luis Potosí, Tlaxcala, and Zacatecas.
9. Includes the states of Campeche, Quintana Roo, Tabasco, and Veracruz.
10. Includes the states of Chiapas, Guerrero, and Oaxaca.

National Trends

At the national level, 18.9 percent of all working-age *ejido* residents have off-farm wage or salaried employment (Table 7.1). About one third of such employment is in the agricultural sector, another quarter in industry (including construction), and the remainder in services and commerce. Men are three times as likely to participate in the labor force as women (28.3 percent versus 9.1 percent). The generation gap, while not significant for men either in terms of overall employment rates or sectoral distribution, is striking for women: daughters still living at home (regardless of marital status) are almost seven times more likely to work off-farm compared to their mothers (18.2 percent versus 2.7 percent). They are also less likely to be employed in agriculture, and more likely to work in the industrial or commercial sectors than the older generation of employed women. What is unclear, without the benefit of long-term panel data or retrospective information on individuals' work histories, is whether the

female generation gap in off-farm employment rates is a life cycle or cohort phenomenon; in other words, whether women who are now "daughters" will maintain their labor force participation rates once they form their own separate households.[8]

Regional Variation

Off-farm employment rates of *ejidatarios* and their families vary significantly by region, with exceptionally high rates of over 28 percent in the Northern states, extremely low rates of less than 12 percent in the South, and between 13 and 21.5 percent in the states of the Center, Gulf, and Pacific North regions. The share of agricultural employment is highest in the Gulf and Southern regions, with two thirds of male household heads who work off-farm employed in this sector in the Gulf states of Campeche, Quintana Roo, Tabasco, and Veracruz. Gender disparities in off-farm employment rates are relatively high in the Gulf and Southern states—where agricultural sector jobs predominate—and relatively low in the regions where there is more industrial employment.

Sectoral Differences

Sectoral distribution is highly differentiated by gender: while over 40 percent of men working off of their own farms have salaried employment in agriculture, women (especially younger women) are more likely to be found in commerce, industry, or other (most likely service sector) wage jobs. Looking at the regional figures, it appears that sons are more concentrated in industrial jobs compared to their fathers only in the Northern and Northwestern states. In the South, there is a surprising intergenerational trend in male sectoral employment patterns, where sons are better represented in agriculture and are less likely to hold industrial jobs than their fathers.

Generational Differences

As mentioned above, at the national level the relationship of younger women to the off-farm labor market is changing more dramatically (with respect to the older generation of women) than for men. This also implies that the gender gap in off-farm employment is narrowing for the younger generation: while male household heads are almost 10 times as likely to be employed off-farm as their wives, the labor force participation rates of sons are less than twice those of daughters. Regional variation in generational differences is apparent, too: while both sons and daughters are more likely than their parents to work off-farm in the Northern and

Pacific Northern states, this trend is true only for women in the other regions, and the labor force participation rate of sons is actually lower than their fathers' in the Center, Gulf, and Southern regions.[9] A striking finding for the Pacific Northern states of Baja California Norte, Baja California Sur, Nayarit, Sinaloa, and Sonora is that off-farm employment rates for the younger generation of women actually exceed those of male household heads (15.6 percent versus 12.7 percent).

Overall, then, the 19 percent rate of off-farm employment for *ejido* residents masks significant variation by gender, generation, and region. In the Northern states, labor force participation rates are especially high for the younger generation of men and women, who are less likely to work in agriculture and more likely to work in the industrial sector than their parents. In the Southern and Gulf states, where agricultural employment is still dominant, even the labor force participation of younger women remains below 12 percent. These differences are attributable in part to labor market conditions, in part to the profitability of the *ejido* sector, and in part to the labor supply characteristics of individuals and households. The following section examines the determinants of off-farm employment in a multivariate context in order to analyze the differential factors influencing the labor force participation status of men and women.

Determinants of Off-Farm Employment

Tables 7.2 and 7.3 present the relevant descriptive statistics and the results of a binomial probit model of off-farm employment among the *ejido* population. The data are drawn from the *Encuesta a Ejidatarios y Comuneros 1997*.[10] The probit model estimates the impact of a series of individual, household, and regional characteristics on the off-farm labor force participation of *ejido* residents. Specifically, off-farm employment is hypothesized to be a function of:

- **Individual Demographic Characteristics.** As is common in labor supply models, the age, sex, and marital status of individuals are expected to influence their employment patterns. We have already seen that men are significantly more likely to hold off-farm jobs than women. Labor force participation is allowed to be quadratic in age, with employment increasing and then decreasing as a person gets older. Being married is hypothesized to have a positive effect on male employment but a negative effect on female employment because of socially defined roles regarding income generation and domestic labor.

Table 7.2. Descriptive Statistics

	All			Men						Women					
				All Men		Male household heads		Sons		All women		Wives		Daughters	
Variable	*Mean*	*Median*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Individual characteristics															
Weeks worked off-farm (including zeros)	5.1	0.0	13.3	6.8	14.4	5.4	12.3	7.9	15.5	3.3	11.7	1.0	6.8	6.4	15.7
Weeks worked off-farm (employed only)	26.9	24.5	18.6	24.2	17.7	20.1	16.5	26.5	17.8	36.1	18.3	36.6	20.0	35.0	18.6
Age	35.3	32.0	17.4	36.2	18.2	51.1	12.8	21.0	6.4	34.4	16.6	45.7	12.4	20.9	7.1
% married	55.0		50.0	53.0	49.9	89.6	30.6	16.6	37.2	56.6	50.0	97.7	15.0	7.7	26.7
Years of education	5.0	6.0	3.6	5.2	3.6	3.3	2.9	7.2	3.1	4.9	3.5	3.1	2.9	7.3	2.9
% indigenous	13.0		33.7	13.4	33.7	15.8	36.5	12.0	32.5	12.6	33.2	14.8	35.5	10.5	30.6
Household characteristics															
Number of household members[1]	6.9	7.0	3.0												
Dependency ratio[2]	0.28	0.3	0.2												

(Table continues on the following page.)

Table 7.2. (continued)

	All			*Men*						*Women*					
				All Men		*Male household heads*		*Sons*		*All women*		*Wives*		*Daughters*	
Variable	*Mean*	*Median*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Number of rooms in house	3.5	3.0	1.5												
% houses with indoor plumbing	47.9		50.0												
Farm size 1994 (NRE hectares)	8.0	4.7	10.7												
Number cattle owned by household 1994	5.7	0.0	12.8												
PROCAMPO payments (1997 pesos)	2,000	1,400	2,400												
Ejido *characteristics*															
Number of households resident in the *ejido*[3]	223.4	161.0	202.1												
Travel time to nearest urban center[4]	47.1	30.0	48.4												

1. Resident members only.
2. Defined as the ratio of children under age 15 to total household members.
3. Includes *ejidatarios*, *posesionarios*, and *avecindados*.
4. Defined as towns with populations over 2,500; travel time is in minutes, by public transportation.

4. Defined as towns with populations over 2,500; travel time is in minutes, by public transportation.

Table 7.3. Binomial Probit Model of Off-Farm Employment among *Ejido* Residents

Variable	*All*		*Men*						*Women*					
			All men		*Male household heads*		*Sons*		*All women*		*Wives*		*Daughters*	
	∂Y/∂X	P(|Z|>z)	∂Y/∂X	P(|Z|>z)	∂Y/∂X	P(|Z|>z)	∂Y/∂X	P(|Z|>z)	∂Y/∂X	P(|Z|>z)	∂Y/∂X	P(|Z|>z)	∂Y/∂X	P(|Z|>z)
Intercept	−.57	.00	−.54	.00	−.15	.43	−1.1	.00	−.31	.00	−.07	.04	−1.2	.00
Individual characteristics														
Sex/generation	.20[1]	.00	.09[2]	.01					.05[3]	.00				
Female head of household									.05	.09				
Age	.02	.00	.02	.00	−.001	.87	.07	.00	.01	.00	.001	.18	.08	.00
Age squared	−.0002	.00	−.0003	.00	−.0001	.38	−.001	.00	−.0002	.00	−.00002	.15	−.001	.00
Married	−.04	.01	.05	.07	.06	.21	.02	.67	−.02	.13			−.02	.65
Education	.01	.00	−.01	.12	−.01	.03	−.005	.34	.01	.00	.002	.05	.01	.06
Indigenous	.02	.37	.001	.98	−.05	.23	.04	.37	.02	.20	.001	.78	.04	.37
Household characteristics														
Household size	.01	.01	.002	.51	−.01	.03	.02	.01	.002	.08	−.0001	.93	.01	.18
Dependency ratio	−.03	.28	−.04	.50	.17	.03	−.10	.32	−.01	.46	.01	.40	−.004	.97
Rooms in house	−.01	.25	−.02	.01	−.02	.09	−.02	.15	.003	.26	.003	.04	−.01	.46
Indoor plumbing	.03	.02	.10	.00	.07	.01	.12	.00	−.01	.20	−.004	.18	−.01	.81
Farm size	−.001	.08	−.002	.08	.001	.68	−.01	.01	.0001	.81	.0001	.38	−.002	.37
Cattle	−.01	.00	−.01	.00	−.01	.00	−.01	.00	−.001	.01	−.0003	.16	−.01	.00
PROCAMPO (thousands)	−.01	.02	−.02	.00	−.03	.00	−.01	.34	−.001	.57	−.0003	.57	.004	.47

(Table continues on the following page.)

Table 7.3. (conintuned)

Variable	All		Men						Women					
			All men		Male household heads		Sons		All women		Wives		Daughters	
Ejido *characteristics*														
No. *ejido* HHs (hundreds)	.01	.00	.02	.00	.03	.00	.01	.31	.003	.07	.001	.48	.008	.16
Travel time to urban center (hours)	.012	.22	.024	.08	.012	.51	.06	.03	–.001	.91	.002	.26	.001	.99
Regional effects														
Southeast Gulf	–.05	.00	–.06	.02	–.04	.31	–.10	.02	–.02	.02	–.001	.82	–.08	.02
North Pacific	–.09	.00	–.16	.00	–.19	.00	–.12	.07	–.02	.29	.001	.93	–.04	.40
North	1.0	.00	.16	.00	.15	.00	.17	.00	.03	.00	.01	.05	.06	.07
South	–.12	.00	–.21	.00	–.17	.00	–.22	.00	–.03	.04	.003	.45	–.18	.00
Model statistics														
Log likelihood function	–1,825.9		–1,196.5		–534.3		–537.6		–518.8		–76.1		–347.3	
% Correct predictions	81.1		72.5		75.1		73.2		90.0		97.1		81.4	

1. Coefficient refers to the effect of being male.
2. Coefficient refers to the effect of being a son.
3. Coefficient refers to the effect of being a daughter.

- **Education and Ethnicity.** Human capital in the form of educational attainment is expected to increase labor force participation, while the relationship between ethnicity (defined as the ability to speak an indigenous language) and off-farm employment is a priori indeterminate. On one hand, insofar as indigenous people have fewer productive assets than their nonindigenous counterparts, they might be more compelled to seek off-farm work.[11] On the other hand, indigenous populations are concentrated in areas with fewer labor market opportunities and may suffer from hiring discrimination (Psacharopoulos and Patrinos 1994).

- **Household Demographics.** The impact of two variables measuring household size and dependency ratio on off-farm employment is hypothesized to vary by both gender and generation. Larger families represent higher levels of both consumer demand and income-generating potential, so the effect of household size on off-farm employment is difficult to predict. Higher dependency ratios (as measured by the percentage of household members under age 15), on the other hand, represent a pure demand effect. For men, this is likely to increase the likelihood of off-farm labor force participation, while for women, who are generally responsible for childcare, greater numbers of children will most likely reduce their wage and salaried employment rates.

- **Housing Characteristics.** As proxy measures of wealth, the number of rooms in people's houses, and whether they have internal plumbing, are expected to be negatively correlated with off-farm employment.

- **Farm-Level Productive Resources.** Two measures of productive assets are used: farm size and the number of cattle in the household's livestock herd.[12] Because of potential endogeneity with current labor supply (wages may be used to purchase land and livestock), 1994 values of these assets are used.[13] Insofar as these variables represent the viability of own-farm production and income generation, they are expected to reduce the probability that a given household member will seek off-farm employment.

- **Unearned Income.** Since 1993, many *ejidatario* households have become eligible for an income support program (PROCAMPO) intended to compensate traditional basic grains producers for the elimination of price guarantees.[14] The level of the payment is based on the amount of land which a household registered as having been historically planted in one of nine basic grains prior to the initiation of the program. PROCAMPO income can therefore be considered exogenous to current

labor allocation decisions, and is expected to reduce the probability of off-farm employment.

- ***Ejido* Characteristics.** Since almost 80 percent of off-farm employment is obtained on or near the *ejido*, it is appropriate to include variables which measure aspects of potential local labor market demand. These include the total number of households residing in the *ejido* (including *ejidatarios*, *posesionarios*, and *avencindados*)[15] and the travel time (using public transportation) to the nearest population center (defined as a town with more than 2,500 inhabitants).

- **Region.** As is clear from Table 7.1 and the discussion in the previous section, off-farm employment rates vary significantly by region. In the model, dummy variables capture the marginal effects of living in regions other than Central Mexico. Consistent with the descriptive statistical analysis, it is expected that *ejidatarios* in the North are more likely to work off-farm, while people from the Southern states are less likely to engage in off-farm employment, with some variation by gender and generation.

As detailed in Table 7.3, the model testing for the determinants of off-farm employment was run for the full sample of individuals, and for men only, women only, male household heads, wives, sons, and daughters. This disaggregation allows for the examination of differences in the signs and magnitudes of the estimated coefficients among the subgroups of interest, to see whether and to what extent the forces driving off-farm employment are distinct for *ejido* residents of different genders and belonging to different generations.

Looking first at the full sample regression, which allows only the intercept term to shift by gender, we see that many, but not all, of the hypothesized relationships are confirmed in the population as a whole. Controlling for all the other supply-side characteristics, and for *ejido*- and regional-level demand factors, men are 20 percent more likely to work off-farm than women. Employment has the expected quadratic relationship to age, with the likelihood of working off-farm increasing to age 36.8 and then decreasing. Marriage deters employment, although this coefficient is picking up the "wife" rather than the "husband" effect—in other words, the off-farm labor market participation of married women but not married men is lower than their single counterparts. Educational level is weakly positively associated with off-farm work, with each additional year of schooling increasing the probability of employment by only 1 percent. For the population as a whole, ethnicity is not statistically correlated with off-farm employment rates. Family size increases employment

rates, and dependency ratios have no statistically significant effect for the pooled sample. The only wealth variable with a statistically significant coefficient is the presence of indoor plumbing, which has the surprising effect of increasing labor market participation by 3 percent.

As expected, greater farm assets (land and cattle) reduce off-farm employment probabilities. The level of unearned PROCAMPO income also significantly reduces the probability that an *ejido* resident will seek wage work. People from larger *ejidos*, where there is presumably more internal demand for hired labor, are more likely to work off-farm, but distance to the nearest urban center does not appear to be a statistically significant determinant of labor force participation. In terms of regional effects, as expected, labor demand factors in the North significantly increase off-farm probabilities (by 10 percent compared to the Central states), while Southern, Gulf state, and Northern Pacific *ejidatarios* with similar individual and household-level characteristics are between 5 and 12 percent less likely to work off-farm than their counterparts in Central Mexico. The full sample model correctly predicts 81 percent of the off-farm employment outcomes.[16]

Disaggregating the sample by gender and generation sheds additional light on the influence of individual-, household-, and *ejido*-level factors on off-farm employment patterns. First, with regard to individual characteristics, male employment rates peak at a later age (37.6) than for women (whose participation increases until age 33 and then drops off). Further, as mentioned above, married men are 5 percent more likely to work off-farm compared to single men, while being married has a downward effect on women's labor force participation.[17] Education appears to be more important for women's than for men's employment; more years of schooling even correlates negatively with off-farm work for male heads of households (the group most likely to have a job in the agricultural sector). Together, these results suggest that the role of married men as "breadwinners" on the *ejidos* includes off-farm employment requiring low levels of formal education, while women—especially unmarried daughters—are more likely to acquire a skilled or semiskilled job requiring some human capital.

Turning to the household-level variables, the lack of statistical significance of the family size and dependency ratio measures for the male subsample masks a more complicated picture, which is revealed when the data are further disaggregated by generation. Interestingly, male household heads with large families are less likely to work off-farm; but if a large percentage of those household members are children, employment rates increase significantly. For sons, on the other hand, the signs on the two household composition variables are just the opposite—labor force participation increases with family size and falls with dependency

ratios.[18] One interpretation of this result is that sons "replace" (substitute for) their fathers' off-farm earnings in more mature households, while male heads have greater responsibility for materially providing for the young children in families that are closer to the beginning of their life cycles. For women as a group, off-farm employment increases with family size, but is surprisingly insensitive to dependency ratios.

For men as a group, and for male household heads, house size has the expected negative correlation with off-farm employment; however, labor force participation rates are higher for those same groups if their home has indoor plumbing. Wealthier wives (as measured by house size) are more likely to work off-farm. One interpretation of these findings is that wealthier households are characterized by male agriculturalists and wives who can use the family capital base to launch their own off-farm enterprises.

The interaction between farm assets, government agricultural payments, and off-farm employment reveals some of the starkest gender and generational differences in the analysis. For men as a group, farm size, number of livestock, and level of PROCAMPO payments all reduce the chances of working off-farm. Upon disaggregation by generation, it appears that livestock and PROCAMPO income—but not farm size—act as deterrents to labor force participation of male heads, while the employment of sons is affected by farm size and livestock but not PROCAMPO payments. The probability of labor force participation of male household heads decreases by 10 percent for every additional 10 cattle owned, and by 3 percent for every additional thousand pesos received in PROCAMPO payments. The likelihood of sons' employment falls by 5 percent with every additional 10 hectares, and by 7 percent for every additional 10 head of cattle owned by the household. Among women, only the off-farm labor market activities of daughters are negatively associated with larger livestock holdings, with the magnitude of the effect very close to that for sons.

How can we interpret these results? One possibility is to consider land, cattle, and government payments as resources over which different household members exercise some discretionary power. In other words, the fact that assets and unearned income have markedly different effects on the labor supply behavior of subgroups of household members may imply the existence of "separate spheres" of resource control within these families.[19] Specifically, it would seem that male household heads, who as the official *ejidatarios* receive PROCAMPO payments in their name, use this income (over which they have at least initial control) to reduce their off-farm employment.[20] Sons, on the other hand, for whom farm size significantly reduces labor market participation probabilities, may be influenced by the fact that they are the likely inheritors of their fathers' land; the larger the farm, the more the labor of sons is needed, and the greater incentive sons have to learn agricultural skills and demonstrate a com-

mitment to the *ejido*. Livestock appears to be the only farm asset that reduces off-farm employment odds for all categories of household members (except wives).

The coefficients on the *ejido*-level labor demand and transportation cost variables suggest that the different demographic groups in the sample are dependent on distinct local labor markets for their off-farm employment opportunities. Male household heads are the only group whose off-farm employment is higher on larger *ejidos*, where there is potentially greater internal demand for hired labor. Sons are more likely to work if they live in a relatively remote *ejido* (as measured by travel time to the nearest urban center), also implying that the source of their employment is local. Women's off-farm employment patterns appear to be insensitive to these *ejido*-level characteristics. Finally, the regional demand effects, while consistent in sign, do vary in magnitude and statistical significance by gender and generation. Northern men, for example, are 15 percent more likely to work off-farm relative to their counterparts in the Central states, while the effect for women is only 3 percent.

In addition to the question of whether an individual works off-farm at all, it may be of interest to know how much of their time is occupied by such employment, and how this varies by gender and generation. A simple comparison of the number of weeks devoted to wage or salaried work by each demographic group suggests a wide range of degree of attachment to the labor market (see Table 7.2)—and the pattern is not necessarily what might be expected. Employed *ejido* women actually worked more weeks during 1997 (an average of 36.1) than men did (24.2), and male household heads, who have the highest overall labor force participation rates, devote the fewest number of weeks per year to these activities (20.1). This suggests that once women—especially daughters—take up paid employment, they are more likely to hold these jobs over long periods of time. Men, on the other hand, may be more inclined to combine shorter-term wage work with seasonally fluctuating farm management responsibilities. The results of a series of estimations of the factors influencing the number of weeks devoted to wage or salaried employment corroborate the off-farm employment patterns reported in Table 7.3, including the gender- and generation-specific impacts of farm assets and PROCAMPO income on employment duration.[21,22]

Conclusion

Our exploration of off-farm employment patterns among *ejido* residents and our analysis of the variation in such patterns among men and women of different generations in the context of institutional and macroeconomic reform have led to the following findings.

First, it is clear that the opportunities to earn wage income, and the availability of jobs in sectors other than agriculture, are quite unevenly distributed among the major rural regions of Mexico. This has implications for the gender composition of employment insofar as labor market competition and sectoral allocation (which may comprise both discrimination by employers and sectoral preferences by potential workers) differentially affect the ability of men and women to obtain off-farm jobs.[23] Judging by the estimated coefficients on the education variable, it appears that women are more likely to obtain skilled or semiskilled jobs, while men are filling unskilled positions. Second, while women's overall labor force participation rates remain low in *ejido* communities, the younger generation is beginning to catch up with their male counterparts—actually significantly exceeding their duration of off-farm employment in a given year. However, since the majority of these women are still single, it is unclear whether they will continue to work once they marry and form households of their own—in other words, whether the high off-farm employment rates of daughters represent a truly generational or a short-term life cycle phenomenon.

A third major finding concerns the relationship between farm-based assets and income and the decision to participate in the wage labor market. All household members are less likely to work off-farm—and to work for longer time periods—if they have relatively large livestock holdings. However, this inverse relationship is especially strong for male household heads, which is also the only group whose off-farm employment patterns are altered by the receipt of PROCAMPO payments. Together, these findings suggest the existence of some degree of private appropriation of farm-based income and assets among the *ejido* population, which in turn influences the labor supply decisions of daughters.

The policy implications of the analysis lie principally in three areas: investment in gender-neutral, off-farm employment opportunities; raising the skill level of all *ejido* residents; and increasing access of all household members to government land tenure and income support programs. First, it has been clear for some time that *ejidatarios* and their families need to supplement their agricultural incomes with wage-based earnings—and as often as not, those wages are earned in the United States. As long as the profitability of small-scale agriculture remains low, it is in everyone's interest that the local labor market develop to provide *ejido* residents with an alternative to international migration—an alternative that will allow them to continue working their farms as well. In some regions, namely the North and Center, the off-farm rural economy is relatively well developed, but incentives and investment are needed in the Southern, Gulf, and Northern Pacific states to promote viable off-farm sources of employment within commuting distance from the *ejidos*. In

planning such investments, it is important that the resulting sectoral and occupational distribution be able to provide jobs for both men and women.[24]

A second possible area for public investment is in the education and training of young *ejido* residents, to better prepare them for skilled and semiskilled off-farm employment. Girls, in particular, seem to be highly responsive to formal education in terms of their propensity to work off-farm, and the length of their labor market attachment. Since fewer than half of the *ejidos* in the sample have their own secondary school, there appears to be ample room for investing in educational infrastructure in these areas. Programs like PROGRESA, which provide educational grants to families, could also raise the level of human capital among *ejido* residents.

Finally, there is the issue of leveling the relationship between farm assets and off-farm employment among household members. Here, public policy could improve the distribution of such assets among family members simply by modifying the allocational mechanisms of the two most important programs in the *ejido* sector: PROCEDE and PROCAMPO. With regard to PROCEDE, it has been argued elsewhere that joint titling in the name of both husband and wife would help alleviate problems associated with a lack of property rights for women, including dispossesion and capital market access (Katz 1998). In the context of off-farm employment, the argument extends to enhancing the ability of women to draw on land assets as an alternative or complement to wage work. The findings in this chapter also suggest that along with PROCEDE titles, PROCAMPO payments should be distributed more equitably among family members. This would mitigate the prospect of the monopolization of this unearned income source by male heads, with implications not only for off-farm employment rates, but also possibly for household expenditure and consumption patterns.

Notes

1. Davis (1998) identifies four principal "adjustment paths": (a) expansion of corn production and land accumulation; (b) diversification into off-farm activities, including migration to the United States; (c) cattle accumulation (often financed by migration remittances); and (d) selling off livestock to finance household consumption.

2. Among married women, another important phenomenon is the emergence of de facto female household headship—and, therefore, female farm management—in the context of widespread male migration. Unfortunately, the data set

used here does not allow for the identification of these types of households, which may pursue land use and livelihood strategies significantly different from (resident) male-headed *ejido* households.

3. See, for example, the publications of the Ejido Reform Research Project of the Center for U.S.–Mexican Studies at the University of California, San Diego, including Cornelius and Myhre (1998).

4. As would be expected, this share varies inversely with farm size. While landless and land-poor households (those cultivating less than 2 hectares) earn one third of their income from wages and one quarter from self-employment, larger farmers with more than 10 hectares of land derive only 10 to 15 percent of their income from wages and another 10 percent from self-employment (Davis 1998).

5. The survey is part of a longitudinal data-gathering effort which began in 1990 and was repeated, with significant alterations, in 1994 and 1997. The 1997 data cover 1,665 households from 286 *ejidos*. Detailed household-level information is available on demographics (including migration), land use and transactions, common property access, agricultural technology and farm production, livestock, credit and insurance, off-farm income, and participation in community organizations and government programs. In addition, a survey conducted at the level of the *ejido* collected data on collective land use and distribution, governance, and social services. For the purposes of the off-farm employment analysis conducted here, 6,135 individuals between the ages of 14 and 75 were included in the data set.

6. This is unfortunate because one third of households earn income from self-employment. However, there is no reliable way of attributing these activities or earnings to individuals within the household.

7. "Sons" and "daughters" are children of the household head still residing with their natal families, regardless of their own marital status. Off-farm employment for all household members between ages 14 and 75 was recorded.

8. Conversely, we do not know whether women who are now "wives" were more active labor force participants before they formed their own households.

9. It should be recalled that the analysis excludes the large number of adult sons who were migrating (and most likely engaging in wage labor) at the time of the survey.

10. As with Table 7.1, all data are weighted to correct for sample stratification.

11. Indigenous households have less land (median 5 hectares, compared to 8 hectares for nonindigenous households), significantly less irrigation (only 3 percent of their land is under irrigation, compared to 21 percent for nonindigenous households), and smaller livestock herds (mean value of 4 cows, compared to 7 cows for nonindigenous households). Wodon and Molnar (1999) find for rural Mexico that, controlling for other observed household characteristics, indigenous households have levels of per capita income 11 percent lower than nonindigenous households.

12. Following De Janvry, Gordillo, and Sadoulet (1997), farm size is converted into National Rainfed Equivalent (NRE) units. This corrects for differences in land quality by weighting plots according to agroecological region (humid tropical, subhumid tropical, humid temperate, subhumid temperate, and arid/semiarid); use of irrigation; and whether the land is in pasture or forest. For a discussion of the precise methodology and weights used, see De Janvry, Gordillo, and Sadoulet (1997).

13. Ideally, 1994 housing wealth would also have been used, but unfortunately these variables were collected only in 1997. Using the panel data reduces the total number of observations to 4,411.

14. For more detailed information on PROCAMPO, see World Bank (1998, Volume II), especially Chapter 7, "Government Programs."

15. *Ejidatarios* possess full membership rights in the governing bodies of the *ejido*; *posesionarios* have formally approved access to *ejido* lands, but cannot vote; *avecindados* live on the *ejido* without any formal property rights and may be children of *ejidatarios* who have started their own family, or households that have relocated to the *ejido* from elsewhere.

16. The model is much better at predicting negative than positive outcomes: while 82.1 percent of predicted nonparticipation in off-farm employment is correct, only 53.5 percent of predicted off-farm employment is correct.

17. Note that adult sons living with their parents are twice as likely to be married as daughters; this patrilocal pattern is due in part to inheritance practices that favor sons (Katz 1998).

18. Only the family size coefficient is statistically significant at < 2 percent.

19. The idea that income and wealth are individually appropriated within families, with important effects on a range of household behavior and welfare outcomes (including expenditures, consumption, and investment in human capital) is

one that is gaining increasing acceptance in the literature on the microeconomics of resource allocation. Some recent empirical examples include Doss (1996); Katz (1995); Lundberg, Pollak, and Wales (1997); Schultz (1990); and Thomas (1990). Theoretical work on the implications of "separate spheres" for intrahousehold resource allocation has been done by Carter and Katz (1997); Chiappori (1997); and Lundberg and Pollak (1993). A particularly relevant application of an intrahousehold perspective to labor supply decisions can be found in Ott (1992).

20. This finding is consistent with case studies that have observed exclusive male participation in the PROCAMPO program, often to the detriment of wives who are left in charge of farm management (but who do not hold title to their land) while their husbands are migrating (Katz 1998).

21. For all groups except wives, a Tobit specification was used in order to account for the large number of zero observations of the dependent variable. In the case of wives, it was decided not to estimate a "weeks worked" equation, since the small number of positive observations (n = 39) would yield biased results. (Results available from author.)

22. For male household heads, each additional 10 head of cattle reduces off-farm employment by three weeks, while every thousand-peso increase in PROCAMPO is associated with a 0.6-week reduction in off-farm labor supply. For sons, the marginal impact of a hectare of land is a loss of 0.2 week's work. Both sons and daughters reduce their labor supply by approximately 0.2 weeks for every 10 additional cattle owned by the household.

23. As discussed, gender disparities in employment rates are highest in regions with large agricultural sectors and lowest in regions with more diversified off-farm employment opportunities.

24. The expansion of the *maquiladora* sector into nonborder regions is a positive development in this regard (see Chapter 4).

References

Carter, Michael R., and Elizabeth G. Katz. 1997. "Separate Spheres and the Conjugal Contract: Understanding the Impact of Gender-Biased Development." In Lawrence Haddad, John Hoddinott, and Harold Alderman, eds., *Intrahousehold Resource Allocation in Developing Countries: Methods, Models and Policies*. Baltimore: The Johns Hopkins University Press.

Chiappori, Pierre-André. 1997. "'Collective' Models of Household Behavior: The Sharing Rule Approach." In Lawrence Haddad, John Hoddinott, and Harold Alderman, eds., *Intrahousehold Resource Allocation in Developing Countries: Methods, Models and Policies.* Baltimore: The Johns Hopkins University Press.

Cornelius, Wayne A., and David Myhre, eds. 1998. *The Transformation of Rural Mexico: Reforming the Ejido Sector.* La Jolla: Center for U.S.–Mexican Studies, University of California, San Diego.

Davis, Benjamin. 1998. "Adjustment in the Ejido Sector." Background paper prepared for *Economic Adjustment and Institutional Reform: Mexico's Ejido Sector Responds.* Washington, D.C.: World Bank.

De Janvry, Alain, Gustavo Gordillo, and Elisabeth Sadoulet. 1997. *Mexico's Second Agrarian Reform: Household and Community Responses, 1990–1994.* La Jolla: Center for U.S.–Mexican Studies, University of California, San Diego.

Doss, Cheryl. 1996. "Women's Bargaining Power in Household Economic Decisions: Evidence from Ghana." Department of Applied Economics, University of Minnesota Staff Paper No. P96–11.

Katz, Elizabeth G. 1995. "Gender and Trade within the Household: Observations from Rural Guatemala." *World Development* 23(2):327–42.

_____. 1998. "Gender and Ejido Reform." Background paper prepared for *Economic Adjustment and Institutional Reform: Mexico's Ejido Sector Responds.* Washington, D.C.: World Bank.

Lanjouw, Peter. 1998. "Poverty and the Non-Farm Economy in Mexico's Ejidos: 1994–1997." Background paper prepared for *Economic Adjustment and Institutional Reform: Mexico's Ejido Sector Responds.* Washington, D.C.: World Bank.

Lundberg, Shelly J., and Robert A. Pollak. 1993. "Separate Spheres Bargaining and the Marriage Market." *Journal of Political Economy* 101(6):988–1010.

Lundberg, Shelly J., Robert A. Pollak, and Terence J. Wales. 1997. "Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit." *Journal of Human Resources* 32(3):463–81.

Ott, Notburga. 1992. *Intrafamily Bargaining and Household Decisions*. Berlin: Springer-Verlag.

Psacharopoulos, George, and Harry Anthony Patrinos, eds. 1994. *Indigenous People and Poverty in Latin America : An Empirical Analysis*. Washington, D.C.: World Bank.

Schultz, T. Paul. 1990. "Testing the Neoclassical Model of Family Labor Supply and Fertility." *Journal of Human Resources* 25(4):599–634.

Thomas, Duncan. 1990. "Intra-household Resource Allocation: An Inferential Approach." *Journal of Human Resources* 25(4):635–664.

Wodon, Quentin, and Augusta Molnar. 1999. "Poverty and Indigenous Attitudes towards Government Programs in Mexico." Background Paper No. 6 for *Mexico: Poverty and Public Policy*. Washington, D.C.: World Bank.

World Bank. 1998. *Economic Adjustment and Institutional Reform: Mexico's Ejido Sector Responds*. Vol. I and II. Washington, D.C.: World Bank.

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